

Applicant : Hongxin Song et al.
Serial No.: 10/600,419
Filed: June 20, 2003
Page : 21 of 35

Att. Dckt. No.: MP0275 / 13361-045001

REMARKS

Claims 1-75 are pending, with claims 1, 12, 22, 34, 45, 53 and 64 being independent. Claims 2, 3, 10, 20, 22, 31, 34, 45, 62 and 64 have been amended. No new matter has been added. Reconsideration and allowance of the above-referenced application are respectfully requested.

Interview Summary

Examiner Rizk is thanked for the interview that was conducted on February 22, 2006 with Applicant's representative, Mr. Kirkland. During the interview, claim 1 and the Behrens reference (US Patent 5,329,554) were discussed, including discussion of why Behrens fails to describe averaging in a retry mode. Additionally, the IDS submissions of June 20, 2003 and August 27, 2003 were discussed (the later submission encompassing the former). Agreement was reached that all objections to the IDS will be withdrawn, and Examiner Rizk will consider the IDS.

Objection to the Information Disclosure Statement:

The information disclosure statement (IDS) filed June 20, 2003 stands objected to. As agreed in the interview, Examiner

BEST AVAILABLE COPY

Applicant : Hongxin Song et al.
Serial No.: 10/600,419
Filed: June 20, 2003
Page : 22 of 35

Att. Dckt. No.: MP0275 / 13361-045001

Rizk will consider the IDS. For the Examiner's convenience, submitted herewith is another copy of the previously submitted 1449 form. Applicant respectfully requests that the Examiner initial and sign the submitted 1449 form (acknowledging that the Examiner has fully considered the references submitted by Applicant), and that a copy of the initialed and signed 1449 form be returned to the undersigned.

Rejections under 35 U.S.C. § 101:

Claims 45-52 stand rejected under 35 U.S.C. § 101 as allegedly being non-statutory subject matter. This contention is respectfully traversed.

35 U.S.C. § 101 states, "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." Furthermore, "A manufacture is 'the production of articles for use from raw or prepared materials by giving to these materials new forms, qualities, properties or combinations, whether by hand labor or by machinery.'

Chakrabarty, 447 U.S. at 308, 206 USPQ at 196-97 (quoting American Fruit Growers, Inc. v. Brogdex Co., 283 U.S. 1, 11

Applicant : Hongxin Song et al.
Serial No.: 10/600,419
Filed: June 20, 2003
Page : 23 of 35

Att. Dekt. No.: MP0275 / 13361 04500.1

(1931))." (See United States Patent and Trademark Office OG Notices: 22 November 2005 - Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility at page 32; emphasis added.) Thus, an article is clearly a manufacture under 35 U.S.C. § 101 and constitutes patentable subject matter. In view of this, withdrawal of the rejection of claims 45-52 under 35 U.S.C. § 101 is respectfully requested.

Rejections under 35 U.S.C. § 112:

Claims 2 and 31 stand rejected under 35 U.S.C. § 112. These claims are definite as written. Nonetheless, claims 2, 3 and 31 have been amended in order to expedite prosecution, clearly resolving any informalities in these claims; these amendments are non-narrowing. Thus, withdrawal of the rejection of claims 2 and 31 under 35 U.S.C. § 112 is respectfully requested.

Rejections under 35 U.S.C. § 102:

Claims 1-75 stand rejected under 35 U.S.C. 102(b) as allegedly being anticipated by Bohrens et al. (US Patent No. 5,329,554). This contention is respectfully traversed.

Applicant : Hongxin Song et al.
Serial No.: 10/600,419
Filed: June 20, 2003
Page : 24 of 35

Att. Dckt. No.: MP0275 / 13361-045001

Behrens, as understood, describes a "pulse detector that uses four samples of an analog signal to detect a pulse as soon as one sample beyond the time of the peak of the signal level at the pulse. [...] The detector uses either the sampled signal levels directly, or a moving average of two samples to perform the detection." (See Behrens at Abstract.) The averaging described in Behrens is a moving average of two samples of an analog signal, where the moving average is used when doing either center sampling in an acquisition mode or side sampling in a tracking mode. (See Behrens at col. 6, lines 43-58.)

The acquisition mode "occurs when the gain control and timing control are acquiring the gain and timing relationships of the pulses. This occurs when the read head is passing a preamble portion of the data record which always has a known data pattern to facilitate acquisition of the timing and gain." (See Behrens at col. 5, lines 33-44.) The tracking mode occurs when data is being transferred. (See Behrens at col. 5, lines 33-44.) The moving average of two samples, as described in Behrens, effectively changes the sampling mode from center to side sampling in the acquisition mode, and effectively changes the sampling mode from side to center sampling in the tracking

Applicant : Hongxin Song et al.
Serial No.: 10/600,419
Filed: June 20, 2003
Page : 25 of 35

Att. Dekt. No.: MP0275 / 13361-045001

mode. (*Compare* Behrens at FIGs. 4-6 and col. 6, line 43 to col. 7, line 8.)

In contrast, a retry mode occurs, for example, "when a first attempt to read specific data on a channel or media has failed"; thus, "the same data is read again." (See the present application at ¶s 18 and 21.) Independent claims 1, 12 and 53 each recite use of an averaged signal in a retry mode. Behrens says nothing about averaging in a retry mode, as recited in independent claims 1, 12 and 53. Ignoring this feature of the claimed subject matter is improper, since interpretations that render some portion of the claim language superfluous are disfavored. (See *Pickholtz v. Rainbow Techs., Inc.*, 284 F.3d 1365, 1373 (Fed. Cir. 2002).)

Moreover, Behrens fails to describe a retry mode at all. Since Behrens is completely silent about retry, Behrens cannot be considered to teach or suggest averaging in a retry mode. Thus, Behrens does not anticipate independent claims 1, 12 and 53, and these claims should be in condition for allowance.

With respect to independent claims 22, 34, 45 and 64, Behrens says nothing about averaging multiple signals "in response to an inadequate read signal". For example, as described in the present specification:

Applicant : Hongxin Song et al.
Serial No.: 10/600,419
Filed: June 20, 2003
Page : 26 of 35

Att. Dekt. No.: MP0275 / 13361-045001

The input signal is a waveform $x(t)$ that represents the result of reading data on a channel or media. The waveform generally includes the desired signal $s(t)$ and noise $n(t)$. [...]

As the waveform $x(t)$ is interpreted, a determination is made as to whether the input signal adequately indicates the discrete values. When there is excessive noise in the input signal, the signal can be rejected as inadequate. In response to an inadequate signal, multiple signals are averaged to improve interpretation of the input signal at 110. For example, when an input signal has too much noise, a new signal can be obtained for the same data, the two obtained signals can be averaged together, and the averaged signal can be interpreted as discrete values.

Newly obtained signals for the same data have the same desired signal $s(t)$ but a different noise component $n(t)$. [...] Assuming that additive white noise makes one third of total noise power, then [the averaged signal] $\bar{x}(t)$ can provide 0.79 dB gain over either [the first input signal] $x_1(t)$ or [the second input signal] $x_2(t)$.

(See the present application at ¶s 15-17.) Behrens does not describe averaging multiple signals in response to an inadequate read signal, as recited in independent claims 22, 34, 45 and 64.

Applicant : Hongxin Song et al.
Serial No.: 10/600,419
Filed: June 20, 2003
Page : 27 of 35

Att. Dekt. No.: MP0275 / 13361-045001

Nonetheless, independent claims 22, 34, 45 and 64 have been amended to more clearly articulate the differences over the cited art. Each of these claims now recite, "wherein the multiple signals comprise separate signals, representing same data, obtained at different times." Thus, Behrens does not anticipate independent claims 22, 34, 45 and 64, and these claims should be in condition for allowance.

Dependent claims 2-11, 13-21, 23-33, 35-44, 46-52, 54-63 and 65-75 should be allowable due to their respective base claims and the additional recitations they contain. For example, claim 9 recites, "further comprising a control circuit that determines whether the discrete values are adequately indicated based on comparison of interpretations of the new averaged signal and the current signal." Claim 9 depends from independent claim 1, which makes clear that the new averaged signal comprises an average of a previous signal stored in the buffer and the current signal.

As understood by Applicant, Behrens never suggests comparing a current signal with an average of the current signal and a previous signal. In Behrens, as understood by Applicant, the samples are either averaged or not, and the comparison circuitry coming after the averaging circuitry always operates

Applicant : Hongxin Song et al.
Serial No.: 10/600,419
Filed: June 20, 2003
Page : 28 of 35

Att. Dckt. No.: MP0275 / 13361-045001

on either un-averaged samples or averaged samples. (See Behrens at FIG. 6 and col. 6, lines 43-58.) There is no comparison of an un-averaged sample with an averaged sample in Behrens. Similar reasoning applies to claims 19, 43 and 61. Thus, each of claims 9, 19, 43 and 61 are patentable over Behrens for at least these additional reasons.

For claim 11, the cited portion of Behrens (col. 6, lines 30-55) says nothing about a retry mode or "a control circuit that causes the previous signal stored in the buffer to be an averaged input signal when two or more signals are obtained in the retry mode." (Emphasis added.) Similar reasoning applies to claims 21 and 63. Thus, each of claims 11, 21 and 63 are patentable over Behrens for at least these additional reasons.

For claim 26, the features of this claim are not addressed in the Office Action. Behrens does not describe, "wherein the input signal comprises a read signal received from a storage medium, interpreting the input signal comprises determining if the read signal adequately indicates the discrete values, and averaging the multiple signals comprises averaging multiple read signals of the storage medium to improve read signal interpretation." (Emphasis added.) For at least these additional reasons, claim 26 should be allowable. Similarly,

Applicant : Hongxin Song et al.
Serial No.: 10/600,419
Filed: June 20, 2003
Page : 29 of 35

Att. Dckt. No.: MP0275 / 13361 045001

the features of claim 68 are not addressed in the Office Action, and claim 68 should be allowable for at least reasons similar to claim 26.

For claim 28, the features of this claim are not addressed in the Office Action. Behrens does not describe, "wherein averaging the multiple signals comprises: in response to the input signal inadequately indicating the discrete values, entering a retry mode; and in the retry mode, obtaining a second signal, averaging the first and second signals, and determining whether the discrete values are adequately indicated based on the averaged signal." (Emphasis added.) For at least these additional reasons, claim 28 should be allowable.

The features of claims 29-33, 50-52 and 70-75 are not addressed in the Office Action. Claims 29-33 should be allowable at least based on their dependence from claim 28. Claims 50-52 and 70-75 should be allowable for at least reasons similar to claims 28-33.

Moreover, the rejection of claims 3-5, 13-15, 38-40 and 55-57 under 35 U.S.C. § 102 cannot be maintained because they are self-inconsistent. It appears that the Office Action is identifying the analog equalizer 204 of Behrens as the claimed filter. But if this is the case, the features of claim 4 (the

Applicant : Hongxin Song et al.
Serial No.: 10/600,419
Filed: June 20, 2003
Page : 30 of 35

Att. Dekt. No.: MP0275 / 13361-045001

buffer is coupled between the ADC and the filter) and claim 5 (the buffer is coupled between the filter and the detector) are even more clearly not shown or described in Behrens. Similar reasoning applies to claims 13-15, 38-40 and 55-57. Thus, the rejection of these claims is improper and should be withdrawn.

In addition, many claims have been rejected under 35 U.S.C. § 102 without specifically addressing the claimed features. These claim rejections are improper and should be withdrawn. For example, the features of claims 10, 20 and 62 have not been specifically addressed. Nonetheless, claims 10, 20 and 62 have been amended to be even more clearly distinguished over Behrens, each claim now reciting, "wherein the defined number is greater than two."

Furthermore, claims 6-8, 16-18, 25, 27, 29, 41, 48, 49, 51, 58-60, 67, 69 and 71 have been rejected under 35 U.S.C. § 102 based on Behrens, even though the Office Action then goes on to explicitly state that Behrens fails to teach all the limitations of these claims. Thus, the rejections of claims 6-8, 16-18, 25, 27, 29, 41, 48, 49, 51, 58-60, 67, 69 and 71 under 35 U.S.C. § 102 based on Behrens are improper and should be withdrawn for this additional reason.

Applicant : Hongxin Song et al.
Serial No.: 10/600,419
Filed: June 20, 2003
Page : 31 of 35

Att. Dckt. No.: MP0275 / 13361-045001

Rejections under 35 U.S.C. § 103:

Claims 6-8, 16-18, 25, 27, 29, 41, 48, 49, 51, 58-60, 67, 69 and 71 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Behrens in view of EP 1 271 509 A1 (Betti). This contention is respectfully traversed.

First, with respect to Betti, please note that, "Mere listing of a reference in an information disclosure statement is not taken as an admission that the reference is prior art against the claims. Riverwood Int'l Corp. v. R.A. Jones & Co., 324 F.3d 1346, 1354-55, 66 USPQ2d 1331, 1337-38 (Fed Cir. 2003)". (See e.g., MPEP § 2129.IV.)

Second, the rejection of claims 6-8, 16-18, 25, 27, 29, 41, 48, 49, 51, 58-60, 67, 69 and 71 constitutes improper hindsight reconstruction, using Applicant's claims as a template to reconstruct the invention by picking and choosing isolated disclosures from the prior art. This is impermissible under the law. For example, the Federal Circuit has stated:

It is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. In re Gorman, 933 F.2d 982, 987, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991). This court has previously stated that "[o]ne cannot use

Applicant : Hongxin Song et al.
Serial No.: 10/600,419
Filed: June 20, 2003
Page : 32 of 35

Att. Dckt. No.: MP0275 / 13361-045001

hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention."

(See *In re Fritch*, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992), quoting *In re Fine*, 837 F.2d at 1075, 5 USPQ2d at 1600.) The present rejection fits the court's description of what may not be done under § 103. The Examiner has merely listed certain components of applicant's invention and then located isolated disclosures of those components. The law requires more than that.

The Examiner must show where the prior art provides a motivation to combine the references he/she has combined in the obviousness rejection. Absent a motivation to combine, obviousness has not been demonstrated. As the Federal Circuit stated in *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 934, 15 USPQ2d 1321, 1323 (Fed. Cir. 1990): "It is insufficient that the prior art disclosed the components of the patented device, either separately or used in other combinations; there must be some teaching, suggestion, or incentive to make the combination made by the inventor."

For example, with respect to claims 7, 17, 42 and 59, the proposed combination of Behrens and Betti offers no teaching or

Applicant : Hongxin Song et al.
Serial No.: 10/600,419
Filed: June 20, 2003
Page : 33 of 35

Att. Dckt. No.: MP0275 / 13361-045001

suggestion of using a signal quality metric that governs which signals are averaged, or error-detection means for controlling which read signals are averaged. The identified motivation ("one of ordinary skill in the art would have recognized the need to combine SOVA and the averaging circuit to improve signal robustness") has not been found in the references themselves, nor has the Examiner provided a "convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." See MPEP 706.02(j), citing Ex parte Clapp, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

To the contrary, the identified motivation provides no basis for modifying Behren's use of signal averaging to change a sampling mode from center to side sampling, or from side to center sampling, to the completely different concept of using a signal quality metric to govern which signals are averaged, when signals are averaged in a retry mode.

In addition, many claims have been rejected under 35 U.S.C. § 103 without specifically addressing the claimed features. These claim rejections are improper and should be withdrawn. For example, the features of claim 27 are not addressed in the Office Action. As understood by Applicant, neither Behrens nor

Applicant : Hongxin Song et al.
Serial No.: 10/600,419
Filed: June 20, 2003
Page : 34 of 35

Att. Dckt. No.: MP0275 / 13361-045001

Betti teaches or suggests, "wherein interpreting the input signal comprises using maximum likelihood detection and error correction to provide the discrete values and a signal quality metric, the method further comprising excluding the input signal from the multiple signals to be averaged based on the signal quality metric." (Emphasis added.) For at least these additional reasons, claim 27 should be allowable. Similarly, the features of claims 49 and 69 are not addressed in the Office Action, and claims 49 and 69 should be allowable for at least reasons similar to claim 27.

For all of the above reasons, a prima facie case of obviousness has not been established for any of claims 6-8, 16-18, 25, 27, 29, 41, 48, 49, 51, 58-60, 67, 69 and 71, and these claims should be in condition for allowance.

Conclusion

In view of the amendments and remarks herein, the Applicants believe that Claims 1-75 are in condition for allowance and ask that those pending claims be allowed. The foregoing comments made with respect to the positions taken by the Examiner are not to be construed as acquiescence with other positions of the Examiner that have not been explicitly

Applicant : Hongxin Song et al.
Serial No. : 10/600,419
Filed: June 20, 2003
Page : 35 of 35

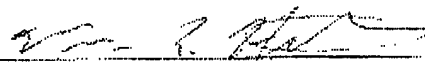
Att. Dckt. No.: MP0275 / 13361-045001

contested. Accordingly, the arguments for patentability of a claim should not be construed as implying that there are not other valid reasons for patentability of that claim or other claims.

A formal notice of allowance is respectfully requested.
Please apply any charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: March 28, 2006



William E. Hunter
Reg. No. 47,671

Fish & Richardson P.C.
PTO Customer No. 26200
Telephone: (858) 678-5070
Facsimile: (858) 678-5099

10577590.doc

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☒ FADED TEXT OR DRAWING
- ☐ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☐ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☐ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.